

CONTINUATION SHEET

Part 1 - Site Information and Assessment

ANL-IL

IL 3890008946

Facility 319 Landfill and French Drain

Description of Substance Possibly Present, Known or Alleged:

The 319 area landfill was used for the disposal of materials that could not be completely checked to assure that they were not radioactive. Such materials included pipes, filters, ductwork, drums, etc. from buildings where radioactivity was used. The landfill was not intended for disposal of any radioactive wastes. A verticle hole was bored into the north end of the landfill into which liquid wastes were poured. Some of these liquid wastes were waste oil, toluene, acetone, methy alcohol, xylene, cyclohexane and ferric chloride.

Description of Potential Hazard to Environment and/or Population:

The greatest potential hazard resulting from the site appears to be the potential for groundwater contamination. Six groundwater monitoring wells have been installed and are monitored on a quarterly basis for radioactivity.



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE IL 02 SITE NUMBER 3890008946

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply) <input checked="" type="checkbox"/> A SOLID <input type="checkbox"/> B POWDER, FINE <input type="checkbox"/> C SLUDGE <input type="checkbox"/> D OTHER _____ <input type="checkbox"/> E SLURRY <input checked="" type="checkbox"/> F LIQUID <input type="checkbox"/> G GAS (Specify)	02 WASTE QUANTITY AT SITE (Measure of waste quantity must be designated) TONS 30,000 gallons 50 NO. OF DRUMS _____	03 WASTE CHARACTERISTICS (Check all that apply) <input checked="" type="checkbox"/> A TOXIC <input type="checkbox"/> B CORROSIVE <input checked="" type="checkbox"/> C RADIOACTIVE <input type="checkbox"/> D PERSISTENT <input type="checkbox"/> E SOLUBLE <input type="checkbox"/> F INFECTIOUS <input checked="" type="checkbox"/> G FLAMMABLE <input type="checkbox"/> H IRRITANT <input type="checkbox"/> I HIGHLY VOLATILE <input type="checkbox"/> J EXPLOSIVE <input type="checkbox"/> K REACTIVE <input type="checkbox"/> L INCOMPATIBLE <input type="checkbox"/> M NOT APPLICABLE
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III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	ONLY WASTE			
SOL	SOLVENTS	2	gallons	Benzene, Methyl Alcohol, Xylene
PSO	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS	1.5	gallons	Diethylamine, Ethyl Acetate
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	2.5	gallons	Barium, Chromium, Copper

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently used CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE-DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
MES	Cobalt-60	999	Landfill	0.6	pCi/gram
MES	Cesium-137	999	Landfill	1.3	pCi/gram
OCC	Hydrogen-3	10028-17-8	Landfill	67,500	pCi/liter
MES	Strontium-90	999	Landfill	48	pCi/liter
MES	Silver	7440-22-4	Landfill	.001	mg/liter
IOC	Arsenic	7440-38-2	Landfill	.005	mg/liter
IOC	Chloride	999	Landfill	520	mg/liter
MES	Copper	7440-50-8	Landfill	.027	mg/liter
IOC	Fluorine	7782-41-4	Landfill	.296	mg/liter
MES	Iron	7439-89-6	Landfill	1.15	mg/liter
MES	Mercury	7439-97-6	Landfill	.00016	mg/liter
MES	Manganese	7439-96-5	Landfill	5,724	mg/liter

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (See Appendix for sources, e.g., State has, testing analysis reports)

SEE CONTINUATION SHEET

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Part 2 - Waste Information

ANL-IL

IL 3890008946

Facility 319 Landfill and French Drain

Sources of Information

- (2) Phase I CERCLA Program, ANL-IL Installation Assessment Report (required by DOE order 5480.14). July 1986, p. 26-29; Sample 3 on page 28.
- (15) Background Information on the 317-319 Area, by N. W. Golchert. June 6, 1985, with attachments; Samples 71S66 and 82W550.
- (17) ANL-IL Intra-laboratory memo to File from C. L. Cheever; Subject: 319 Landfill and ENE 319 Landfill; February 16, 1988.
- (19) Typed list of chemicals, quantities and disposal dates, "From hand written sheets - chemicals put into the [319] landfill"; not dated.



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
11 3890008946

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED 23,000

02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

SEE CONTINUATION SHEET

01 ☒ B SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED 0

02 ☐ OBSERVED (DATE 10/21/85) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

SEE CONTINUATION SHEET

01 ☐ C CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED 0

02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

The landfill and the site of the French Drain have been covered with topsoil and grass. The potential for air contamination is negligible.

01 ☐ D FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED _____

02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ E DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED _____

02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☒ F CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED 1 acres

02 ☒ OBSERVED (DATE 8/5/85) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

SEE CONTINUATION SHEET

01 ☒ G DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED 23,000

02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

SEE CONTINUATION SHEET

01 ☒ H WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: 50 employees

02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

SEE CONTINUATION SHEET

01 ☐ I POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED _____

02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

CONTINUATION SHEET

Part 3 - Description of Hazardous Conditions and Incidents

ANL-IL

IL 3890008946

Facility 319 - French Drain

Groundwater Contamination:

The potential for groundwater contamination exists. Groundwater in parts of the ANL-IL facility is in the perched condition because of the relative impermeability of the underlying silty clay. This clay can restrict downward waterflow and create a lateral perched water-flow condition. The groundwater pattern in the area would probably follow the area topography, flowing southeasterly toward the Des Plaines River. Contaminated water may percolate downward into the perched groundwater and migrate in a southeasterly direction offsite. (Ref. (5), p.2).

Population = 3,000 employees plus 20,000 residents within three miles and north of the Des Plaines River.

Surface Water Contamination:

A water sample collected on 10/21/85 from the point where the surface drainage leaves the landfill showed the tritium concentration at the site boundary was $2.8 \times 10^{-5} \mu\text{Ci/ml}$ and the strontium-90 was $6.4 \times 10^{-9} \mu\text{Ci/ml}$. The concentrations are greater than ambient levels but below DOE standards. (Ref. (19) p. 34.) Surface water in the immediate area is not used for drinking water or recreational purposes.

Contamination of Soil:

Absorbed water in soil samples collected from the 319 Landfill area contained tritium above ambient levels. Several samples contained metals at concentrations above ambient levels. Sample 85S15 contained copper at 1775 micrograms/gram, lead at 274 micrograms/gram and cadmium at 6.7 micrograms/gram. (Ref. (2) p. 26-29.)

Drinking Water Contamination:

In the vicinity of ANL-IL, only subsurface water (from both shallow and deep aquifers) and Lake Michigan water are used for drinking purposes. The potential for contamination of groundwater used for drinking purposes does exist. Two principal aquifers are used as water supplies in the vicinity of ANL-IL. The upper aquifer is the Niagaran-Alexandrian dolomite, which is about 200-ft. thick in the ANL-IL area and has a piezometric surface between 50 and 100 ft.

CONTINUATION SHEET

Part 3 - Description of Hazardous Conditions and Incidents

ANL-IL

IL 3890008946

Facility 319 Landfill and French Drain

Water Contamination: (con't.)

below the ground surface. The lower aquifer is the Galesville sandstone which lies between 490 and 1500 ft. below the surface. Maquoketa shale separates the aquifers and retards hydraulic connection between the aquifers.

The four domestic water wells currently in use at ANL-IL are about 300-ft. deep in the Niagaran dolomite. All four wells are located north of the site. The nearest well is approximately one mile northeast of the site. Groundwater in the area of the site probably flows toward the southeast.

The distance to the nearest well is one to two miles and a population of 3,000-10,000 is served.

Population = 3000 employees + 20,000 residents within three miles and north of the Des Plaines River.

(Ref. (1) p. 8,12; Ref. (2) p.6 and Attachment 1; Ref. (5) p. 1-2).

Worker Exposure/Injury:

The potential for worker exposure to contaminated soil or water does exist for employees who enter the area for work, monitoring or inspection purposes. However, to date, no such exposure has been reported.



POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
IL 3890008946

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☒ J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☒ POTENTIAL

☐ ALLEGED

The potential for damage to flora exists for flora in the immediate vicinity of the landfill and French Drain location.

01 ☒ K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION (include name(s) of species)

02 ☐ OBSERVED (DATE: _____)

☒ POTENTIAL

☐ ALLEGED

The potential for damage to fauna does exist since a number of animals wander freely at ANL-IL and in the forest preserve.

01 ☐ L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES
(Spills/runoff/standing liquids/leaking drums)

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: _____

04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____)

☐ POTENTIAL

☐ ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 23,000 (SEE CONTINUATION SHEET)

IV. COMMENTS

SEE CONTINUATION SHEET

V. SOURCES OF INFORMATION (Cite specific references, e.g. state lab sample analysis reports)

SEE CONTINUATION SHEET

CONTINUATION SHEET

Part 3 - Description of Hazardous Conditions and Incidents

ANL-IL

IL 3890008946

Facility 319 - French Drain

Total Population Potentially Affected:

(3000 employees + 20,000 residents within three miles and north of the Des Plaines River.) (Ref (1) p.8).

Comments:

Soil and water samples should be collected from the area and analyzed for organic, inorganic and priority pollutant contaminants.

Deep groundwater monitoring wells should be installed in the area to determine if contaminants are in the drinking water aquifer.

Sources of Information:

- (1) 1986 Annual Site Environmental Report for Argonne National Laboratory (Report #ANL-87-9) by N. Golchert and T. Duffy.
- (2) Phase I CERCLA Program, ANL-IL Installation Assessment Report (required by DOE order 5480.14), July 1986.
- (3) 1988 Inventory of Federal Hazardous Waste Activities (for ANL-IL).
- (4) Environmental Assessment Related to the Operation of Argonne National Laboratory (DOE/EA-0181), August 1982.
- (5) ANL-IL Intra-laboratory memo, to N. W. Golchert, from S. Y. Tsai; Subject: Groundwater Monitoring Plan for the 317-319 Area; September 17, 1985.
- (20) 1985 Annual Site Environmental Report for Argonne National Laboratory (Report #ANL-86-73) by N. W. Golchert, T. L. Duffy and J. Sedlet, p. 34.

Summary Report for Preliminary Assessment of the ANL-IL

Facility 319 - Landfill and French Drain

4/13/88

The Facility 319 Landfill and French Drain were closed about 16 years ago and there are only sketchy records of what went into the French Drain. Environmental monitoring has shown evidence of radioactive contaminants associated with this site. Routine environmental monitoring for hazardous chemical contaminants is pending.

- Recommendations:
- (1) Further characterize environmental contamination at this site through analyses of monitoring well samples for potential toxic chemical pollutants.
 - (2) Continue to collect environmental monitoring data for radioactive contaminants.
 - (3) Complete a Site Inspection (SI).